

CLAIMS

What we claim as our invention is:

1. A method of servicing a catalytic reactor system, comprising an abatement of at least one hazardous substance from the catalytic reactor system while preserving activity of a catalyst contained therein.
2. The method of claim 1, wherein the abatement comprises an oxidation of the at least one hazardous substance.
3. The method of claim 2, wherein the oxidation of the at least one hazardous substance occurs at a temperature of from about 350° F to about 500° F.
4. The method of claim 1, wherein the at least one hazardous substance is abated to a safe exposure level.
5. The method of claim 1, wherein the at least one hazardous substance comprises benzene.
6. The method of claim 2, further comprising monitoring an amount of the at least one hazardous substance and controlling the oxidation of the at least one hazardous substance in response thereto.
7. The method of claim 6, wherein the monitoring the at least one hazardous substance further comprises obtaining samples at an inlet and an outlet of the catalytic reactor system.
8. The method of claim 6, wherein the at least one hazardous substance is abated to a safe exposure level.
9. The method of claim 6, wherein the at least one hazardous substance comprises benzene, and the benzene is abated to an amount less than about 1 ppmv.
10. The method of claim 1, wherein the catalyst activity is substantially the same before and after the servicing.

11. The method of claim 10, wherein the catalyst activity as measured by T-eq after the servicing is within about 20° F of the catalyst activity before the servicing.
12. The method of claim 1, wherein the catalyst activity as measured by T-eq before the servicing is at least about 30° F below an end-of-cycle T-eq.
13. The method of claim 1, wherein a fouling rate as measured by change in T-eq per week increases by no more than about 30% after the servicing.
14. The method of claim 1, wherein the catalytic reactor system is a fixed bed reactor system.
15. The method of claim 1, wherein the catalytic reactor system is a reforming reactor system.
16. The method of claim 15, wherein the reforming reactor system comprises a plurality of reactors.
17. The method of claim 1, wherein the catalyst is a reforming catalyst.
18. The method of claim 1, wherein the catalyst is a platinum catalyst.
19. The method of claim 1, wherein the catalyst has one or more cycles of catalyst activity.
20. The method of claim 1, wherein the servicing comprises dumping and screening the catalyst.
21. The method of claim 1, wherein the servicing comprises replacing a spent catalyst.
22. The method of claim 21, further comprising reclaiming metal from the spent catalyst.
23. The method of claim 20, further comprising reloading the catalyst after servicing and subsequently starting-up the catalytic reactor system.
24. A method of servicing a catalytic reactor system, comprising oxidizing the catalytic reactor system at a temperature of from about 350° F to about 500° F to abate at least one hazardous substance from the catalytic reactor system and reducing servicing time by about 50% of a time required for complete regenerative oxidation of the catalytic reactor system.

25. The method of claim 24, wherein the at least one hazardous substance is abated to a safe exposure level.
26. A method of servicing a catalytic reactor system, comprising abating at least one hazardous substance from the catalytic reactor system such that a fouling rate of a catalyst contained therein is substantially the same before and after the servicing.
27. A method of controlling an oxidation procedure in a catalytic reactor system, comprising:
- a) oxidizing the catalytic reactor system at a temperature of from about 350° F to about 500 °F;
 - b) monitoring abatement of at least one hazardous substance within the catalytic reactor system; and
 - c) controlling the oxidation in response to the monitoring such that activity of a catalyst contained therein is preserved and the at least one hazardous substance is oxidized to a safe exposure level.
28. The method of claim 27, wherein the oxidation is stopped before regenerating the catalyst in order to preserve catalyst life.